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The effect of demographic factors on investor's risk tolerance

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Abstract
Investors invest their savings for the purpose of getting more money in order to finance their future consumption. Investment decisions are made with the expectation of earning certain rate of return and the actual return earned by the investor may differ from it. Investors provide more emphasis for risk associated with variable investment avenues when making their investment decisions. Different people have different risk tolerance level and it depends on several factors. The objective of the study is to identify the relationship between demographic factors and investor's risk tolerance. It is found that demographic factors such as age, education, investment experience and income of the investors are correlated with their risk tolerance and; gender, occupation and civil status are not related with risk tolerance.

Keywords: finance, investor

Introduction

Investment is one of the important term in the day to day life of every people. Mainly, people with saving enter into the world of investment. People save money by sacrificing the current consumption and invest them for the purpose of future consumption. Bodie, Kane and Marcus (1998) [4] defined the term investment as the current commitment of money and other resources in the expectation of gathering future benefits. Expected return and risk are the two major aspects related with an investment. Investors invest their money with the objective of earning a certain return. The rate of return expected to be earned from the investment is called as expected return. However, the actual return from the investment may differ from the expected return and this situation is called as risk. According to the standard finance rational investors try to maximize their returns for a given level of risk they bear, or minimize their risks for a given level of return.

According to Grable (2008) [11] financial risk tolerance is the willingness of a person to engage in a financial transaction in which the outcomes are uncertain. In other words it is the maximum amount of volatility one person is willing to accept when making a financial decision. Investor's Investment decisions heavily depend on the nature of risk tolerance of investors. This financial risk tolerance may differ from one person to another based on their demographic features. This paper attempts to examine the extent to which demographic factors affect an investor's risk tolerance attitude.

Literature Review

A study conducted by Hallahan, Faff, and McKenzie (2004) [17] concluded that only 4% of respondents accurately estimated their tolerance for risk while 73% and 23% of respondents under-estimated and over-estimated their risk tolerance respectively. Hsee and Weber (1997) [18] argued that investors have a tendency to under-estimate their own risk tolerance level.

A. Age

Old people gain investment knowledge and experience, and have the ability to make better investment Choices (Korniotis & Kumar, 2011) [19]. Wallach and Kogan (1961) [26] and Deaves, Veit, Bhandari, and Cheney (2007) [6] observed a negative association between age and risk tolerance. Nairn (2005) [22] also confirmed his view and mentioned that older people show more risk averse behaviour. They argued that since Young people have more time horizon and capacity to recover from potential financial losses, they tend to take more risk than older people. Contrary to this, Grable (1997) [13], Grable and Joo (1997) [13] and Wang and Hanna (1998) found a positive relationship or failed to identify a relationship between age and risk tolerance.

B. Gender

Bajtelsmit, Bernasek, and Jianakoplos (1999) [2] concluded that women exhibit low level of risk tolerance. Grable and Roszkowski (2007) [14] argued that risk tolerant level of men is higher than women and men tend to overestimate their appetite for taking risks. Gaur and Sukijha (2011) [9] found that women have less confidence in investment decisions and when they make equity investment decisions they take more care. However, Grable and Joo, (1999) [12] observed an insignificant relationship between gender and risk tolerance.

C. Marital status

In the case of effect of marital status on risk tolerance married persons tend to exhibit low level of risk tolerant compared to single persons (Hallahan *et al*., (2004) [17]; Yao & Hanna, 2005 [25]. Ardehali, Paradi, & Asmild, 2005) [1]. Married people may feel that potential losses of their risky investment decisions may affect the financial positions of their family and the relationship with other family members. In addition, married people have more number of dependents and more financial commitments. Thus they exhibit risk averse behaviour.

However, Grable (2000) [10] observed that married people were more risk tolerant than single persons.

D. Level of Education
Level of formal education of an individual tends to influence risk tolerance (Baker & Haslem, 1974 [3]. and Grable & Lytton, 1998) [15]. People with higher level of education are always ready to take more risk whereas, less educated people are risk averse (Sung & Hanna 1996; Grable, 2008; Halek & Eisenhauer, 2001; Lewellen, Lease, & Schlarbaum, 1977) [23, 11, 16, 20].

E. Occupation
Occupation of the investor may play a role in financial risk tolerance. According to Maccrimmon and Wehrung (1986) [21] self-employed people always ready to take more risk than others. Similarly people employed in the private sector tend to take more risk than employees in the state sector (Sung & Hanna 1996) [23].

F. Income
Ardehali *et al*., (2005) [1], Deaves *et al*., (2007) [6] and Nairn (2005) [22] found a positive relationship between income and risk tolerance and argued that higher level of income serves as a buffer to face the possible losses which may arise in future.

Significance of the Study
People make investment for the purpose of earning money to finance their future consumption. Future consumption and standard of living of them highly depend on the success of their investments. But due to the risk associated with investments investors may not be able to obtain expected return. In some situations they may be unable to recover capital. It will affect the future life of the investors. Thus investors provide more attention to the risk factor associated with investment and by considering these facts they decide their risk tolerance level. Demographic factors play a major role in deciding the risk tolerance level of investors. Better understanding about the relationship between demographic factors and risk tolerance helps investors to improve the quality of their investment decisions and standard of living of them. It will also support financial institutions and policy makers in designing new financial products.

Objective of the Study
The study aims to achieve the following objectives
i. To assess the financial risk tolerance level of individual investors in the Jaffna Municipal Council area.
ii. To identify the relationship between demographic factors of investors and their risk tolerance.

Hypothesis
H0: There is no association between demographic factors of individual investors in the Jaffna Municipal Council area and their risk tolerance.
H1: There is an association between demographic factors of individual investors in the Jaffna Municipal Council area and their risk tolerance.

Methodology
This study aims to identify the relationship between demographic factors of household investors in the Jaffna Municipal Council area and their risk tolerance. The demographic factors such as gender, age, income, occupation, civil status, investment experience and educational level are considered as independent variables whereas risk tolerance level is considered as dependent variable. This study is a primary data based study the relevant data was collected through a structured questionnaire. The sample for the study consists of 100 household investors in the Jaffna Municipal Council area. The Jaffna Municipal Council is an administrative division in the Jaffna District, Sri Lanka. The sample respondents were selected under convenience sampling technique. Chi Square test and correlation analysis were applied with the support of SPSS, to identify the associations between demographic factors of investors and their risk tolerance.

Analysis
Table 1 shows the profile of respondents.

Table 1: Profile of Respondents

Demographic Factors		Number of Respondents	Percentage
Gender	Male	53	53.0
	Female	47	47.0
Age	<25	9	9.0
	25-35	20	20.0
	36-45	20	20.0
	46-55	41	41.0
	>55	10	10.0
Civil Status	Single	20	20.0
	Married	80	80.0
Educational Qualification	G.C.E.O/L	16	16.0
	G.C.E. A/L	40	40.0
	Graduate	36	36.0
	Post Graduate	8	8.0
Investment Experience	<3 Years	13	13.0
	3-6 Years	31	31.0
	7-9 Years	45	45.0
	>9 Years	11	11.0
Occupation	Self employed	21	21.0
	Private sector employee	34	34.0
	Government employee	45	45.0
Monthly Income	<25000	6	6.0
	25000-35000	33	33.0
	35001-45000	40	40.0
	45001-5500	16	16.0
	>55000	5	5.0

Source: Compiled from the survey data.

Table 1 shows the demographic profile of respondents. Among the entire respondents of the survey 53% of them are male and 47% are female. 80% of the respondents are married. 40% of them with the educational qualification of G.C.E. A/L. The total sample respondent comprises of 45% of government employees and 34% of Private sector employees. Balance of them ate self-employed.

A. Relationship between Gender and Risk Tolerance.
Hypothesis 1
H0: There is no relationship between gender and risk tolerance.
H1: There is a relationship between gender and risk tolerance.

Table 2: Relationship between Gender and Risk Tolerance

		Risk Tolerance Level					Total
		Very Low	Low	Average	High	Very High	
Sex	Male	7	15	24	5	2	53
	Female	6	16	17	6	2	47
Total		13	31	41	11	4	100

Source: Compiled from the survey data.

According to Table 2 majority of male and female exhibit average risk tolerance level and only 2% of the male and female respondents are ready to take higher level of risk.

Table3: Chi-Square Tests for Gender and Risk Tolerance

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.039	4	.904

Table3 shows the results of Pearson chi-square tests for gender and risk tolerance and it indicates the computed value of 1.039 with the significance value 0. 904 at 95 percent confidence level. Since the tabulated value is 9.488, the null hypothesis of there is no relationship between gender and risk tolerance is accepted and alternate hypothesis is rejected. Thus it is concluded that gender has no significant influence on the risk tolerance of investors.

Table 4: Correlation Analysis between Gender of Respondent and Risk Tolerance

		Sex	Risk Tolerance Level
Sex	Pearson Correlation	1	-.003
	Sig. (2-tailed)		.977
	N	100	100
Risk Tolerance Level	Pearson Correlation	-.003	1
	Sig. (2-tailed)	.977	
	N	100	100

Table 4 reveals a weak negative correlation between gender of respondent and their risk tolerance level.

B. Association between Age and Risk Tolerance.

Hypothesis 2

H0: There is no association between age and risk tolerance.

H1: There is an association between age and risk tolerance.

Table 5: Relationship between Age and Risk Tolerance

		Risk Tolerance Level					Total
		Very Low	Low	Average	High	Very High	
Age	<25	1	2	6	0	0	9
	25-35	0	5	12	2	1	20
	36-45	0	10	7	3	0	20
	46-55	11	11	15	2	2	41
	>55	1	3	1	4	1	10
Total		13	31	41	11	4	100

Source: Compiled from the survey data.

Table 5 indicates that investors in the most of the age groups are ready to take average level of risk only and 22% of respondents in the age group of 46-55 are risk averse.

Table 6: Chi-Square Tests for Age and Risk Tolerance

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	32.796	16	.008

Table 6 shows the results of Chi-Square Tests for age and risk tolerance and the computed chi-square value is 32.796 with the significance value of 0.008 (which is less than 0.05) at 95 percent confidence level. The table value is 26.296. Thus the null hypothesis is rejected and concluded that there is an association between age and risk tolerance.

Table 7: Correlation Analysis between Age of Respondent and Risk Tolerance

		Age	Risk Tolerance Level
Age	Pearson Correlation	1	-.065
	Sig. (2-tailed)		.522
	N	100	100
Risk Tolerance Level	Pearson Correlation	-.065	1
	Sig. (2-tailed)	.522	
	N	100	100

According to Table 7 there is a negative association between age of investors and risk tolerance level.

C. Association between Civil Status and Risk Tolerance.

Hypothesis 3

H0: There is no correlation between civil status and risk tolerance.

H1: There is a correlation between civil status and risk tolerance.

Table 8: Relationship between Civil Status and Risk Tolerance

		Risk Tolerance Level					Total
		Very Low	Low	Average	High	Very High	
Civil status	Single	1	6	8	4	1	20
	Married	12	25	33	7	3	80
Total		13	31	41	11	4	100

Source: Compiled from the survey data.

Table 8 reveals that a considerable number of married respondents show either lower or very lower level of risk tolerance.

Table 9: Chi-Square Tests for Civil Status and Risk Tolerance

	Value	**df**	**Asymp. Sig. (2-sided)**
Pearson Chi-Square	3.148	4	.533

According to the table 9, results of chi-square Tests for civil status and risk tolerance indicates a chi-square value of 3.148 with the significance value of 0.533. Thus the null hypothesis of there is no correlation between civil status and risk tolerance is accepted.

Table 10: Correlation Analysis between Civil Status and Risk Tolerance

		Civil Status	**Risk Tolerance Level**
Civil Status	Pearson Correlation	1	-.143
	Sig. (2-tailed)		.155
	N	100	100
Risk Tolerance Level	Pearson Correlation	-.143	1
	Sig. (2-tailed)	.155	
	N	100	100

Table 10 shows that there is a negative correlation between civil status of investors and risk tolerance level.

D. Relationship between Educational Qualification and Risk Tolerance.

Hypothesis 4

H0: There is no relationship between educational qualification and risk tolerance.

H1: There is a relationship between educational qualification and risk tolerance.

Table 11: Relationship between Educational Qualification and Risk Tolerance

		Risk Tolerance Level					**Total**
		Very Low	**Low**	**Average**	**High**	**Very High**	
Educational Qualification	G.C.E.O/L	3	4	7	1	1	16
	G.C.E.A/L	5	15	19	1	0	40
	Graduate	4	10	15	5	2	36
	Post Graduate	1	2	0	4	1	8
Total		13	31	41	11	4	100

Source: Compiled from the survey data.

Table 11exhibits that for entire educational qualification categories except post graduates a higher number of respondents show an average level of risk tolerance.

Table 12: Chi-Square Tests for Educational Qualification and Risk Tolerance

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	22.941	12	.028

According to the Table 12 the computed value of 22.941is greater than the table value of 21.026. Thus the null hypothesis of there is no relationship between educational qualification and risk tolerance is rejected and concluded that educational qualifications of respondents have an effect on the level of risk tolerance of them.

Table 13: Correlation Analysis between Educational Qualification and Risk Tolerance

		Educational Qualification	Risk Tolerance Level
Educational Qualification	Pearson Correlation	1	.190
	Sig. (2-tailed)		.058
	N	100	100
Risk Tolerance Level	Pearson Correlation	.190	1
	Sig. (2-tailed)	.058	
	N	100	100

Correlation Analysis between educational qualification and risk tolerance shown in the Table 13 reveals that there is a positive relationship between educational qualification and risk tolerance.

E. Relationship between Investment Experience and Risk Tolerance.

Hypothesis 5:

H0: There is no association between investment experience and risk tolerance.

H1: There is an association between investment experience and risk tolerance.

Table 14: Relationship between Investment Experience and Risk Tolerance

		Risk Tolerance Level					Total
		Very Low	Low	Average	High	Very High	
Investment Experience	<3 Years	1	2	7	2	1	13
	3-6 Years	2	17	10	2	0	31
	7-9 Years	8	9	23	4	1	45
	>9 Years	2	3	1	3	2	11
Total		13	31	41	11	4	100

Source: Compiled from the survey data.

Table 15: Chi-Square Tests for Investment Experience and Risk Tolerance

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	26.998	12	.008

According to Table 15 the computed chi-square value is 26.998 with the significance value of 0.008. Therefore the null hypothesis of there is no association between investment experience and risk tolerance is rejected. It is concluded that investment experience of investors is related with their risk tolerance.

Table 16: Correlation Analysis between Investment Experience and Risk Tolerance

		Investment Experience	Risk Tolerance Level
Investment Experience	Pearson Correlation	1	.018
	Sig. (2-tailed)		.857
	N	100	100
Risk Tolerance Level	Pearson Correlation	.018	1
	Sig. (2-tailed)	.857	
	N	100	100

Table 16 shows a positive relationship between investment experience and risk tolerance.

F. Relationship between Occupation and Risk Tolerance.

Hypothesis 6

H0: There is no correlation between occupation a and risk tolerance.

H1: There is a correlation between occupation a and risk tolerance.

Table 17: Relationship between Occupation and Risk Tolerance

		Risk Tolerance Level					Total
		Very Low	Low	Average	High	Very High	
Occupation	Self Employed	2	6	11	2	0	21
	Private sec. Employee	3	13	13	4	1	34
	Govt. Employee	8	12	17	5	3	45
Total		13	31	41	11	4	100

Source: Compiled from the survey data.

Table 18: Chi-Square Tests for Occupation and Risk Tolerance

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.965	8	.761

According to the results of Chi-Square tests for occupation and risk tolerance in table 18, since the computed value is less than the tabulated value of 15.507 the null hypothesis of there is no correlation between occupation a and risk tolerance is accepted.

Table 19: Correlation Analysis between Occupation and Risk Tolerance

		Occupation	Risk Tolerance Level
Occupation	Pearson Correlation	1	.002
	Sig. (2-tailed)		.988
	N	100	100
Risk Tolerance Level	Pearson Correlation	.002	1
	Sig. (2-tailed)	.988	
	N	100	100

Table 19 shows a weak positive correlation between occupation and risk tolerance.

G. Relationship between Income and Risk Tolerance.

Hypothesis 7:
H0: There is no association between income and risk tolerance.
H1: There is an association between income and risk tolerance.

Table 20: Relationship between Income and Risk Tolerance

		Risk Tolerance Level					Total
		Very Low	Low	Average	High	Very High	
Income	<25000	2	0	4	0	0	6
	25000-35000	7	13	12	0	1	33
	35001-45000	3	12	20	5	0	40
	45001-5500	1	4	4	5	2	16
	>55000	0	2	1	1	1	5
Total		13	31	41	11	4	100

Source: Compiled from the survey data.

Table 20 reveals that 20 respondents under the monthly income category of 25000-35000 exhibit risk averse behavior and another 20 respondents under the monthly income category of 35001-45000 are ready to take moderate level of risk only.

Table 21: Chi-Square Tests for Income and Risk Tolerance

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	30.877	16	.014

According to the results of the chi-square Tests in the Table 21 computed value is 30.877 with the significance value of 0.014 and the tabulated value is 26.296. Since the computed value is greater than the tabulated value, the null hypothesis is rejected and concluded that income is correlated with level of risk tolerance of investors.

Table 22: Correlation Analysis between Income and Risk Tolerance

		Monthly Income	Risk Tolerance Level
Monthly Income	Pearson Correlation	1	.333
	Sig. (2-tailed)		.001
	N	100	100
Risk Tolerance Level	Pearson Correlation	.333**	1
	Sig. (2-tailed)	.001	
	N	100	100

Table 22 indicates a positive relationship between monthly income of investors and their risk tolerance level.

Discussion

Risk is an important factor considered by the investors when making investment decisions. In order to earn more return, investors need to take more risk. However, the risk tolerance level of investors depends on various factors. In this study an attempt was made to study the association between the demographic factors of investors and their risk tolerance level. It was found that there is no association between gender and risk tolerance and this finding is in agreement with the conclusion of Dhiman, Singu & Raheja (2015) [5]. Age of the investors is negatively correlated with risk taking behaviour of investors. Older investors are reluctant to take more risk because they may feel that future losses may affect their financial well beings in the retirement period. No differences could be observed among the levels of risk tolerance of single and married investors. This observation differs from the findings of the most of the studies in this area. The level of education and investment experience of investors are positively related with risk tolerance. Investors with higher level of education and experience have more understanding on various investment options and their features. They also have knowledge in managing the risk by using various techniques. Occupation of respondents does not play a role in their risk taking attitude. It is also concluded that income of investors is also positively correlated with risk tolerance. Deaves *et al*., (2007) [6] and Nairn (2005) [22] also observed this kind of relationship.

Conclusion

According to the results of the study demographic factors such as age, education, investment experience and income of the investors are correlated with their risk tolerance. However, gender, occupation and civil status are not related with risk tolerance. These findings will be helpful for the investors to improve their investment decision making skills. Further risk tolerance of an investors may depend on the behavioural factors too. Thus future studies may consider effect of behavioural factors on risk tolerance.

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